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HOW TO MAKE AN Industrial Site Survey



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formula for growth

HOW TO MAKE AN Industrial Site Survey

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Foreword

A firm seeking a location for a new plant needs a site ideal for both present use and future expansion. To back its efforts to attract new industry, a local economic development organization must be fully prepared to supply information on individual plant sites in the area and to point out the unique advantages of each site.

This takes long and careful preparation. But it is worth the effort because it produces results.

This guide explains how to identify sites ideal for industry and equally important—how to assemble this information for use in attracting new and expanding companies.

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Why Make An Industrial Site Survey In Your Community?

A community that identifies all local sites suitable for industry and compiles accurate, up-to-date site information enjoys a distinct advantage in the highly competitive quest for new industry and jobs. Failure to develop such factual information—and failure to keep it up-to-date—may jeopardize the area's development effort.

What A Prospect Needs To Know

The value of a thorough industrial site survey for your community is perhaps best seen through the eyes of the industrial prospect himself. A manufacturer considering a possible location for a new or branch plant is not convinced by mere assurances of "lots of fine plant sites in town." He wants clear evidence that these sites exist and that at least one of the sites is available and suitable for the operation of his proposed plant.

To determine whether or not one of your local sites suits his requirements, the manufacturer must know where all the sites are located; their size, cost, topography, grading requirements, and susceptibility to flooding; drainage characteristics and load-bearing capacity of the soil, depth to ground water, zoning designation, tax rate, adjacent land use, existing industrial buildings, and other improvements; and the utilities and transportation facilities by which they presently are or definitely will be serviced by the time a plant would be in operation.

Some brief comments concerning several of these factors may serve to clarify their respective roles in site selection.

1. SIZE AND SHAPE

One of the most obvious changes in plant location, over the last few decades, has been the general trend toward larger sites. In most cases, a relatively large lot is sought in order to insure adequate space for deliveries, employee parking, and possible future expansion. Also, a spacious, well-landscaped site makes for better plant appearance than a smaller site and, at the same time, provides greater privacy.

As to shape of site, the usual preference is for a site of regular shape or one otherwise suitable from such standpoints as building layout, access to transportation, parking, and future expansion.

2. TOPOGRAPHY

So far as topography is concerned, the usual preference is for a comparatively level site, with just enough slope to provide good drainage. There are exceptions, however. Some firms may choose a hilltop location because of supposed advantages in appearance and advertising value. In other cases, the type of building preferred by the company may be best adapted to a sloping site. For example, the president of one small company wished to construct his plant on a hill so that shipments and deliveries could be made on two levels.

3. UTILITIES

Utilities are always an important consideration in the inspection of individual plant sites. The utilities with which manufacturing establishments are chiefly concerned are electric power, water, natural gas, and sewerage. While utility rates may represent an important cost variable between communities, they are normally uniform within a community. Hence, the principal difference in utility costs between sites in the same community is found in the cost of extending utility lines to the plant site. In many cases, this represents a significant element in the total, developed cost of the site.

4. WATER SUPPLY

An adequate, safe, and reliable source of water is needed for drinking and sanitary purposes. In addition, many industrial plants use large quantities of water in the production process. When this is the case, location near a natural source of water is frequently a necessity, and such characteristics of the water supply as temperature, mineral content, bacterial content, and regularity of flow may be quite important.

5. FLOODING

Whenever flooding is a possibility it should be a major site consideration. If records of previous floods are available, these should be checked over a long period. If not, long-time residents of the area and newspaper accounts of past floods can often provide useful information.

While some firms are willing to incur the risk of occasional flooding to gain other site advantages, the customary policy is to insist on a flood-free site.

6. DRAINAGE AND SOIL CONDITIONS

Large areas of standing water on a site indicate that subsurface drainage problems can be expected. It is important to avoid the site that is a natural low spot.

Soil engineers should be consulted, particularly in doubtful situations, for assurance that soil conditions will permit adequate drainage once anticipated site development has been completed.

Soil structure should be investigated, since it may also have a significant bearing on foundation conditions and the cost of developing the site. It must receive special attention if contemplated plant structures or equipment require land with an exceptionally high load-bearing capacity.

Test borings will show graphically where rock is located, whether the groundwater table is high or low, whether the soil will drain easily, and whether there is sufficient topsoil to stabilize the ground surface after construction.

7. COST OF DEVELOPMENT

The cost of a developed site is much more significant than the price of the unimproved acreage. A prospect will consider, not only the original cost of the land, but also the estimated additional costs of grading, filling, drainage, excavation, foundation construction, building access roads, constructing a railroad siding, providing for water supply and waste disposal, and bringing in other necessary utilities. When all development costs are brought into the comparison, the lowest-priced site sometimes turns out to be the most expensive.

8. LOCATION WITHIN THE COMMUNITY

As a site factor, location within the community has various facets. One is accessibility—from the standpoints of employees, customers, and salesmen. Roads, traffic conditions, availability of public transportation, and distance from residential areas must be taken into account in this regard. Another facet is advertising value. Toward this end, a location on a main highway or main-line railroad, or one from which the plant is visible over a large area may be sought. Still another facet of site location concerns the immediate surroundings. Like a family shopping for a new home, the manufacturing firm looks for attractive surroundings and tries to avoid possible community relations problems.

9. TRANSPORTATION FACILITIES

Transportation is a significant factor at each major stage of site selection; that is to say, in the choice of region, community, and specific site. Accessibility of a site to the various modes of local transportation is usually a primary consideration to a prospect. Thus, if the firm plans to use railroad transportation, it must look into the feasibility and cost of constructing a spur or siding. (Some firms like to provide switching facilities, even if little rail shipment is in prospect, so as to allow for possible future use and add to the resale value of the plant.) If it plans to ship by truck, attention must be given to such matters as distance from main highways, type of access roads, roadway requirements within the site, and potential traffic problems. Similarly, other forms of transportation present their own special problems of accessibility.

Many industrial firms require fast transportation, not only for their executives, but for the receipt of raw materials and delivery of their products. These firms are finding the airport-industrial park concept extremely practical. There are an estimated 45,000 private business planes in use now, and the number is growing. The need for an airport to stimulate economic growth will become increasingly more apparent as executive air travel further expands and the air transportation industry assumes a still larger role in moving goods. In surveying tracts of land as possible locations for an air-industrial park, these points should be considered:

►Access roads and other local means of ground transportation serving an existing airport often can do double duty to serve industrial firms locating near the air facility.

►Any available land located near an airport is likely to be level and therefore often suitable for industrial development. Such land—frequently owned by the community—is ideal for modern, horizontal-type buildings.

►Utilities—water, gas, sewer, electricity—already available at airports usually can be extended to serve adjacent industrial uses.

Site surveys for integrated airport-industrial development should be made in conjunction with discussions with the Federal Aviation Administration. FAA guidance is important in evaluating prospective air-industrial sites in terms of anticipated flight patterns, required clear zones, height restrictions on nearby buildings, and safety regulations in general.

10. TAXES AND INSURANCE

In site selection, tax considerations are usually centered on property tax rates and assessments.

As regards property taxes, many companies pay as much attention to long-range stability as to the present level of rates.

Fire insurance costs are considered in surveying both communities and sites. In selecting the community, plant locators are interested primarily in insurance ratings. In evaluating sites, the prospect is usually careful to note all factors likely to affect the insurance classification of the plant.

11. ZONING AND OTHER LEGAL ASPECTS

Zoning is a site factor that has often been overlooked in the past. Profiting from the experiences of others, most firms now regard proper zoning as highly essential. A careful check of zoning regulations is desirable for two principal reasons—to avoid litigation and to protect the new plant against incompatible industrial neighbors or other land use. In addition to zoning, other local regulations, such as building codes, laws relating to waste disposal, smoke, and fumes, and restrictions on highway use need to be checked.

Who Makes A Site Survey?

Many local development organizations have a committee concerned with the needs of existing and potential industry. In areas participating in the program of the Economic Development Administration, this committee helps prepare the area Overall Economic Development Program (OEDP).

To organize and direct a site survey, it is desirable to obtain the services of people experienced in plant-site selection who have skills in determining qualifications of land for various industrial uses. The ideal site-survey team includes representatives of the local or county planning, zoning, engineering, and tax assessment staffs; industrial land realtors; local chamber of commerce officials; area development representatives of utility and transportation firms serving the community; and officials of firms already located in the area. They decide exactly what information to collect on each site and to keep on hand for ready reference.

State agencies can provide helpful information and guidance on industrial site surveys, and they should be consulted in the early stages of organizing the surveys.

Basic Tools for Site Identification

Maps and aerial photographs are helpful in identifying potential industrial sites accurately and compiling pertinent data on them that prospects want to know. To start, obtain as large-scale a base map as practicable. Identify on it all available sites, including such major features as industrial zoning boundaries; road, rail, air, and water transportation networks; and major utility lines (water, sewage disposal, gas, and power). As individual sites are identified, depict them on separate maps covering the above items in detail, together with topographic features, notation of areas subject to flooding, direction of prevailing winds, character of adjacent land uses, and similar data helpful to manufacturers in selecting a plant site.

Particular attention should be given the location of existing industrial buildings or other buildings that can be converted to industrial use. In addition, photographs of these buildings should be

made from several angles and combined with floor plans and other pertinent data. This information is of special interest to prospects with priority needs for available building space.

Consult the following research tools . . .

Land-use maps are usually prepared by the planning commission responsible for community planning activities in your area. They are helpful in locating existing tracts of land in industrial use and identifying land uses in sections adjacent to proposed new industrial sites. They also show locations of airports and airstrips.

Semi-Public Lodge or Club Churches	
Public Town School Municipal Utility	
Commercial Industrial Business Retail, Service, Office Joint Occupancy Theatre Auto Sales/Repair Gasoline Station	
Residential Single Family (3AC. & Over) Single Family (Under 3AC.) Multi-Family Trailer	
Farm	Y X AND D
Cemetery	
Vacant (Unsubdivided) Over 1AC.	
Vacant Lots	
Wooded	

Zoning maps, available from the town or county zoning office, indicate current zoning of land deemed suitable for industrial sites and point up any need to rezone this land if current zoning is other than industrial. Zoning maps, in showing current zoning adjacent to proposed industrial sites, indicate the type of neighboring development that may be expected in the future.





Railroad maps are available from offices of railroads serving your community or from the municipal engineer's office. Large-scale maps showing number of tracks, spurs, and yard and switching limits, are of great interest to users of railroad freight facilities.



Utility maps, indicating the limits of municipal and private water districts, the distribution of sewage disposal service, and the location of gas and electric power lines, are compiled by local utility companies, the State public service commission, or your local planning commission, and are available from them.



Topographic quadrangle maps of the county or local area, prepared at a scale of 1:24,000, reduce the amount of on-the-site time needed to determine the amount of site grading that is necessary. They also provide information on probable drainage conditions and show waterways and other transit facilities in detail for site-planning purposes. You can determine whether your area is covered by these maps by checking the INDEX TO TOPOGRAPHIC MAPPING, available on request to the Map Information Office, Geological Survey, U.S. Department of the Interior, Washington, D.C. 20240.



Aerial photographs are useful to supplement and correct topographic maps, including identification and location of man-made land features developed since the topographic surveys were prepared. They are valuable in determining current land use in areas where existing land-use maps are outdated. They also show the site in relation to nearby transportation facilities, power lines, and community services.

For information concerning the best and latest available aerial photographic coverage of your county or area, consult the Map Information Office, Geological Survey, U.S. Department of the Interior, Washington, D.C. 20240. This agency is responsible for coordinating and indexing vertical and oblique aerial photography flown for all Federal agencies. In some instances, aerial photographs are already available from city and county planning commissions, and county agricultural extension agents.



How To Identify Sites Suitable for Industry

After obtaining basic mapping and photographic material, proceed to identify suitable sites as follows:

PRELIMINARY IDENTIFICATION. Referring to topographic maps, outline on the base map those land areas with a slope of approximately 10 percent or less. Referring to recent aerial photographs, land-use maps, and zoning maps, locate vacant tracts with slope of 10 percent or less that are available for industrial use. (Note: Zoning boundaries may be changed by official action if it is shown that land currently zoned for other land uses is more suitable for industry.) Referring to transportation maps, draw lines parallel to and about 1 mile from paved highways and railroads (the maximum distance from these transportation facilities that plants will normally be located). Referring to utility maps, plot location of electric transmission lines, gas lines, water supply lines, and sewage disposal systems.

ON-SITE INSPECTION AND SELECTION. Once preliminary data have been plotted on the large base map, and those tracts with the best characteristics for industrial use are tentatively identified, your sitesurvey team can inspect these tracts. Utilizing their combined skills and experience, team members eliminate from consideration any tracts that present serious drawbacks for plant operation and service. They confirm the potential industrial value of other tracts and determine what improvements are required to make them more attractive to manufacturers.

Following this the team must ascertain the availability of the tracts selected and obtain definite price agreements for their acquisition. Your industry committee then can quote for prospects firm prices on individual tracts.

A Planned Industrial District?

A controversial subject in site development concerns the advantages and disadvantages of industrial district sites, as compared with individual sites. The "organized" or "planned" industrial district is essentially a tract of land that is subdivided and developed according to a comprehensive plan for the use of a community of industries, with basic utilities installed before sites are sold.

The typical occupant of an industrial district is a light manufacturing plant or warehouse requiring small to medium-size accommodations. Districts have tended to be designed for companies desiring to occupy less than 10 acres of property 200-400 feet in depth. Heavy industries occupying large, special-purpose buildings are absent from most districts.

The quality of industrial parks or districts varies greatly. The best parks maintain exceptionally high standards and offer tenants many useful services.

Some of the characteristics that distinguish the true industrial parks are:

- 1. Development according to master plan, under the supervision of competent management.
- 2. Complete preparation of site, including all necessary grading and filling, utility lines, streets, and railroad sidings.
- 3. Adequate protection of occupants against incompatible neighbors, substandard or unattractive plant construction, undesirable land utilization or crowding, and smoke, fumes, noise, or other nuisances.
- 4. Provision of various types of centralized services, such as building maintenance, medical and restaurant facilities, public warehousing, and (in a few cases) central computing.
- 5. Provision of architectural and financing services for those who desire it. Some districts offer a "turn-key" service, under which the management of the district will plan and erect the plant to a tenant's specifications, and also make whatever financing arrangements are necessary.

Industrial districts may be the answer to many locational problems of small manufacturers. While many of the larger manufacturing concerns are well-equipped with plant-location experts, engineers, and other specialists who can completely investigate sites and services, the smaller manufacturers could largely be spared these surveys. Moreover, district sites meet the demand for locations away from traffic congestion, parking problems, and cramped sites. They allow space for modern one-story plants. Also, they save management the headaches and delay attendant on developing raw sites, and offer the assurance of compatible neighbors. Many manufacturers, however, believe that the disadvantages of industrial park sites offset the advantages.

Probably the common objection to industrial park sites is the high cost. Site readiness and professional management are services that must be paid for, and the difference in final cost between district and non-district sites is sometimes more apparent than real. Nevertheless, many firms feel that the cost of district sites substantially exceeds the initial cost plus development expense of individually situated sites. Small companies, in particular, tend to look upon the cost of industrial park locations as excessive.

Another criticism of industrial districts is that room for expansion is limited by the closeness of neighboring plants. In order to "pay out," the developers usually insist on a high ratio of land coverage. The initial plant usually covers about 60 percent of the plot, and options on vacant land for expansion are usually for a short period. Another objection is that a whole new set of traffic problems may be created. Traffic congestion in the city core may be traded for traffic congestion in the suburbs. Finally, some companies fear "loss of identity" in an industrial district location.

Ready-Reference Site Map and Data File

Your industry committee must be prepared to answer readily all questions prospects may ask about each site marked for potential industrial development. Inability to provide essential data, or delay in making information available, may cause a prospect to look to another community. A good site data sheet includes such items of information as location, description of property (acreage, shape, grade, mineral rights), utilities (electricity, natural gas, water, sewerage, telephone), transportation (railroad, airport, motor freight, highways), zoning, owner, and remarks. A scale drawing of the site is nearly always included, showing the exact shape and relation to such physical features as rail lines, roads, and streams. Photographs of the site (surface and aerial views) often accompany the description. A typical site data sheet appears on page 17.

Descriptions of available industrial buildings are another important type of records kept by area development organizations. The model building card below has been developed by an electric company working closely with real estate firms. Enough essential data to answer preliminary inquiries are recorded on $5'' \times 8''$ cards. These are rechecked at 90-day intervals to insure currency, and they always get an additional checking before being submitted to a prospect.

Model Building Card

AGENT/OWNER: _				SIZE
LOCATION:		NO. 0	F STORIES:	
EXTRA GROUND:_		CONST	FRUCTION:	
CEILING HGT:	SIZE OF	BAYS:	CRANI	ES:
FLOORS:	WT:		_ELEVATO	RS:
ROOF: V	WINDOWS:		SPRINKLE	RED:
BOILER PLANT:	FUI	EL:	LAVA	ГORY:
ELEC:	GAS:	WAT	ER:	SEWER:
RR SIDING:		TRUCKI	NG FAC:	
TAXES: ZO	NING:		PUB: TRAN	S:
CONDITION:	REC	ENT USE	:	S or L:*
PRICE OR TERMS:		AVA	ILABLE:	
REMARKS:				
				CHECKED

Source: Philadelphia Electric Company * Sale or Lease



⁴⁰ acres

RADNOR TOWNSHIP

LOCATION & DESCRIPTION: East side of Radnor-Chester Road, south of the Pennsylvania Railroad at Radnor Station. Land is generally sloping and partially wooded.

ZONING: Residential-Variance must be obtained for suitable project.

RAILROADS: Pennsylvania Railroad (Main Line) at north end of property.

- STREETS & HIGHWAYS: Radnor-Chester Road is an improved North-South highway. A proposed highway will bisect site from Radnor Station to Lincoln Highway (U.S. Rt. #30).
- LOCAL TRANSPORTATION: Pennsylvania Railroad Radnor Station; Red Arrow lines on Rt. #30.
- UTILITIES: Electricity: Phila. Electric Co.—33 Kva along P. W. R/W; 4 KV line on Lincoln Highway; 4 KV on Radnor-Chester Road.
 - Gas: Phila. Electric Co.—16" H.P. main on Radnor-Chester Rd. 10" Intermediate Pressure main on Lincoln Highway; 4" (proposed) I. P. main from Lincoln Highway north on new road approx. 1200' to Wyeth, Inc.

Water: Phila. Suburban Water Co.—6" main on Radnor-Chester Rd. extending south to Radnor Twp. School; 8" main on Lincoln Highway; 8" main on new road from Lincoln Highway to Wyeth, Inc.

Sewer: Dotted line on print shows approximate location.

CONTACT: Industrial & Commercial Development Division Phila. Electric Co.—1000 Chestnut St.—Phila., Pa. 19105 Individual maps graphically describing each site, or group of neighboring sites, are helpful to prospects in the evaluation process. From the standpoint of a prospect's plant requirements, each site map should show such characteristics as size, topography, zoning, and relation to transportation facilities and service utilities. Exhibits on this and following pages are from "Community Economic Inventory: Cecil County, Maryland." They show how one area illustrated the essential characteristics of its proposed industrial sites.

For promotional purposes, similar graphic materials for industrial sites in your area—maps, charts, aerial photographs, and descriptions—can be combined as a brochure. Copies should be sent to

EXHIBIT 1

Industrial Sites: This chart lists 13 sites available and zoned for industry in Cecil County. The following exhibits give a graphic orientation of these sites as depicted on various types of maps.

Site Number	Name of nearest Incorporated town	Approx. Acreage	Number of Owners	Industrial Zoning	Servable by Railroad	Distance to Nearest Municipal Water Sup- ply Lines (miles)
1	Rising Sun	85	2	Heavy	PRR	Adjacent
2	Perryville	50	1	Light	B&O	Adjacent
3	Perryville	115	1	Heavy	PRR	Adjacent
4	Perryville	170	1	Heavy	PRR	1
5	North East	170	1	Heavy	PRR	Adjacent
6	Elkton (Singerly)	110	2	Light	B&O	2
΄7	Elkton	70	1	Heavy	PRR	Adjacent
8	Elkton	120	2	Heavy	PRR	1
9	Elkton	55	1	Heavy	PRR	1
10	Elkton	175	1	Heavy	PRR	Adjacent
11	Elkton	40	1	Heavy	PRR	11/2
12	Chesapeake City	110	1	Light	None	Adjacent
13	Chesapeake City	130	1	Heavy	None	Adjacent

a selected list of industrial prospects; to the State agency coordinating development activities in your State; State credit corporations or authorities; and to utilities, railroads, and other transportation companies capable of serving your industrial sites.

Complete site-survey files contain a wide range of information and data on each designated site. This information includes not only current conditions and site characteristics, but also scheduled changes expected to improve the site and its ability to serve industrial activities of various kinds. Note should be made where a site appears particularly well suited to a specific industry or industry group. In all instances, data files must regularly be kept up-to-date.

Distance to		Highway Truck Miles to 12 ft. Draft Barge Shipping Facilities		Highway Truck Miles		Miles
Nearest Municipal	Distance to Nearest	Present: Port		Facilities		hing
Sewerage Collection Sewers (miles)	Natural Gas Lines (miles)	Deposit, Perryville or Chesa- peake City	Potential: North East or Elkton	Present: Balt., Md.	Present: Wilmington, Del.	Potential: Perryville, Md.
Adjacent	7	8		45	31	10
Adjacent	10	1		40	34	1
Adjacent	11	2	At Site	40	34	1
1	12	3	At Site	40	34	2
Adjacent	6	9	At Site	59	27	9
2	2	11	4	55	23	16
Adjacent	1	8	21⁄2	53	21	14
1	1	8	21⁄2	53	21	14
1	1	8	2½	53	21	14
Adjacent	1	8	21⁄2	53	21	14
11⁄2	1	9	4	55	19	16
Adjacent	51/2	1/2	Adjacent	59	21	20
Adjacent	5½	1	1	59	21	20

EXHIBIT 2

The 13 available sites zoned for industry are shown in relation to roads, railroads, and waterways.



EXHIBIT 3

Five of the industrial sites are shown on a topographic map with terrain features and elevations. Included is detailed information on man-made features.



EXHIBIT 4

Three of the sites are outlined on an oblique aerial photograph, offering the industrial prospect a perspective view he could obtain in no other way.



A Suggested Industrial Site-Survey Check List

The check list summarizes the basic data to be compiled on most industrial sites. Special conditions or resources in your own community and area will indicate changes or suggest other categories of information to maintain in your site files.

1. TITLE or other designation of site
2. ACREAGE
 3. LOCATION
 4. ZONING a. Zoning of site
5. OWNER(S) Address
6. COST: Per Acre \$; Total \$
7. CHARACTER OF TERRAIN (maximum slope and other in- dicators of possible need for grading)

ō.	ESTIMATED GRADING COST \$
9.	ELEVATION (relative to highest known highwater level) a. Low point b. High point
10.	SOIL AND WATER a. Load-bearing characteristics of soil b. Sub-soil characteristics c. Depth to bedrock d. Depth to ground water
11.	DRAINAGE a. Natural runoff capacity b. Need for artificial drainage facilities c. Need for flood protection (include existing facilities)
12.	PREVAILING WINDS (note seasonal variations)
13.	UTILITIES a. Water (1) Company name (2) Rates \$ (3) Size of mains
	 (4) Pressure

	 c. Electricity (1) Company name
	 (b) Sanitary
14.	TRANSPORTATION a. Roadway access to site (designation of location)
	 e. Waterways serving site or area
15.	IMPROVEMENTS ON SITE a. Industrial buildings
16.	TAXES a. On land b. On improvements

Notes

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